

## CLAIMS

What is claimed is:

1. A method of establishing transmission headers for stateless group communication of data packets to nodes in a distribution tree, said method comprising:
  - encoding said distribution tree to produce an encoded distribution tree;
  - creating a header including said encoded distribution tree; and
  - adding said header to a data packet to be distributed to said distribution tree.
2. The method in claim 1, further comprising modifying said header as said data packet is distributed down said distribution tree to remove encoded information concerning upper distribution levels of said distribution tree.
3. The method in claim 1, further comprising decoding a portion of said encoded distribution tree as a node receives said data packet and re-encoding said encoded distribution tree as said node passes said data packet to another node down said distribution tree.
4. The method in claim 1, wherein said distribution tree controls the order in which said nodes receive said data packets.
5. The method in claim 4, wherein by controlling the order in which said nodes receive said data packets, said encoded distribution tree permits said nodes to process said data packets upon receipt.
6. The method in claim 1, further comprising, prior to said encoding process, creating said distribution tree at a sender node based upon a dynamic group of receiver nodes.

7. The method in claim 1, wherein said encoding comprises sequentially entering addresses of nodes during a per-level traversal of said distribution tree starting from the root of said distribution tree.

8. A method of establishing transmission headers for stateless group communication of data packets to nodes in a distribution tree, said method comprising:

encoding said distribution tree to produce an encoded distribution tree;

creating a header including said encoded distribution tree; and

adding said header to a data packet to be distributed to said distribution tree,

processing said encoded distribution tree at each node, thereby indicating to which node said data packet should be next transferred.

9. The method in claim 8, further comprising modifying said header as said data packet is distributed down said distribution tree to remove encoded information concerning upper distribution levels of said distribution tree.

10. The method in claim 8, further comprising decoding a portion of said encoded distribution tree as a node receives said data packet and re-encoding said encoded distribution tree as said node passes said data packet to another node down said distribution tree.

11. The method in claim 8, wherein said distribution tree controls the order in which said nodes receive said data packets.

12. The method in claim 11, wherein by controlling the order in which said nodes receive said data packets, said encoded distribution tree permits said nodes to process said data packets upon receipt.

13. The method in claim 8, further comprising, prior to said encoding process, creating said distribution tree at a sender node based upon a dynamic group of receiver nodes.

14. The method in claim 8, wherein said encoding comprises sequentially entering addresses of nodes during a per-level traversal of said distribution tree starting from the root of said distribution tree.

15. A method of stateless group communication of data packets to nodes in a distribution tree, said method comprising:

- encoding said distribution tree to produce an encoded distribution tree;
- creating a header including said encoded distribution tree; and
- adding said header to a data packet to be distributed to said distribution tree;
- decoding a portion of said encoded distribution tree as a node receives said data packet;

and

- re-encoding said encoded distribution tree as said node passes said data packet to another node down said distribution tree.

16. The method in claim 15, further wherein said decoding and re-encoding modifies said header as said data packet is distributed down said distribution tree to remove encoded information concerning upper distribution levels of said distribution tree.

17. The method in claim 15, wherein said distribution tree controls the order in which said nodes receive said data packets.

18. The method in claim 17, wherein by controlling the order in which said nodes receive said data packets, said encoded distribution tree permits said nodes to process said data packets upon receipt.

19. The method in claim 15, further comprising, prior to said encoding process, creating said distribution tree at a sender node based upon a dynamic group of receiver nodes.

20. The method in claim 15, wherein said encoding comprises sequentially entering addresses of nodes during a per-level traversal of said distribution tree starting from the root of said distribution tree.

21. A program storage device readable by machine, tangibly embodying a program of instructions executable by the machine to perform a method of establishing transmission headers for stateless group communication of data packets to nodes in a distribution tree, said method comprising:

- encoding said distribution tree to produce an encoded distribution tree;
- creating a header including said encoded distribution tree; and
- adding said header to a data packet to be distributed to said distribution tree.

22. The program storage device in claim 21, wherein said method further comprises modifying said header as said data packet is distributed down said distribution tree to remove encoded information concerning upper distribution levels of said distribution tree.

23. The program storage device in claim 21, wherein said method further comprises decoding a portion of said encoded distribution tree as a node receives said data packet and re-encoding said encoded distribution tree as said node passes said data packet to another node down said distribution tree.

24. The program storage device in claim 21, wherein said distribution tree controls the order in which said nodes receive said data packets.

25. The program storage device in claim 24, wherein by controlling the order in which said nodes receive said data packets, said encoded distribution tree permits said nodes to process said data packets upon receipt.

26. The program storage device in claim 21, wherein said method further comprises, prior to said encoding process, creating said distribution tree at a sender node based upon a dynamic group of receiver nodes.

27. The program storage device in claim 21, wherein said encoding comprises sequentially entering addresses of nodes during a per-level traversal of said distribution tree starting from the root of said distribution tree.